

REMARKS

Claims 4-19 are now pending in the application. By this paper, Claims 4, 7, 8 and 10 have been amended and Claims 1-3 have been canceled. Bases for the amendments can be found throughout the application, drawings and claims as originally filed. The Examiner is respectfully requested to reconsider and withdraw the rejections in view of the amendments and remarks contained herein.

CLAIM AMENDMENTS

Applicant notes that the amendments presented by this paper merely present various dependent claims in an independent form (that incorporates all of the limitations of the base claim and any intervening claim) and cancels various claims and as such, the amendments must be entered.

REJECTION UNDER 35 U.S.C. §102

Claim 1 stands rejected under 35 U.S.C. §102(b) as being anticipated by McIntyre (U.S. Pat. No. 510,283). Applicant notes that Claim 1 has been canceled by the paper.

REJECTION UNDER 35 U.S.C. §103

Claims 1-3 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Kugelmann (U.S. Pat. No. 5,492,390) in view of Gray (U.S. Pat. No. 2,176,335). Applicant notes that Claims 1-3 have been canceled by the paper.

Claim 4 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Kugelmann (U.S. Pat. No. 5,492,390) in view of Gray (U.S. Pat. No. 2,176,335) and further in view of Nagai (U.S. Pat. No. 5,499,547). This rejection is respectfully traversed.

Applicant submits that the Office has not presented a prima facie case of obviousness as the Examiner has not determined the scope and content of the prior art, ascertained the differences between the prior art and the claims, or considered the level of ordinary skill in the pertinent art. *Graham v. John Deere Co.*, 383 U.S. 1, 17-18 (1966). Rather, the Office has merely stated that “Kugelmann does not teach ‘wherein said hub has at least one pair of brushes electrically connected to said actuators, said brushes positioned to engage with a pair of voltage rails transferring electrical energy to energize said actuators’ and that “Nagai teaches a linear electric actuator using brushes attached to electrical contacts (56) to transfer electricity to the actuator” and that “it would have been obvious to one having ordinary skill in the art to modify the pulley in Kugelmann with the linear actuator in Nagai to change the shape of the pulley since electricity is an inexpensive and readily available power source.”

Applicant notes that it is wholly improper to simply combine elements of Kugelmann, Gray and Nagai in this manner, even if all of the elements of the present claims could be found in either Kugelmann, Gray and Nagai. In this regard, Applicant notes that the Supreme Court has stated that “[a]s is clear from cases such as *Adams*, a patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art.” *KSR Int’l v. Teleflex Inc.*, 127 S.Ct. 1727, 82 USPQ2d 1385, 1396 (2007). Moreover, in discussing the review of a determination of obviousness, the Supreme Court quoted from *In re*

Kahn stating that "rejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness." *Id*

Applicant submits that the Office has provided mere conclusory statements and has not provided the articulated reasoning and rational underpinning to support its conclusions. For example, the Office has completely neglected any discussion as to how the linear actuator of Nagai would be incorporated into wheel of Kugelmann. Significantly, the motor and ball screw (12) of the linear actuator of Nagai are disposed in a frame and a block (16) is moved in response to rotation of the ball screw (12) (see Fig. 3).

The Office has also neglected any discussion as to why the proposed modification would be desirable. As the Examiner knows, the Patent Laws draw a distinction between trade-offs and motivation to combine: trade-offs often concern what is feasible, not what is necessarily desirable, whereas motivation to combine requires the latter. See, e.g., *Winner International Royalty Corp. v. Wang*, 2002 F.3d 1340, 53 USPQ2d 1580 (Fed. Cir.), *cert. denied*, 530 U.S. 1238 (2000).

Applicant notes that Kugelmann discloses that "[e]xtension of the ram rods 20-31 is accomplished through hydraulic, electrical, mechanical, pneumatic mean[s] or combinations thereof." Consequently, the statement that the desirability of the substitution of the linear actuator of Nagai for the extension rods of Kugelmann because "electricity is an inexpensive and readily available power source" cannot be sufficient justification for the modification because Kugelmann discloses electrically operated ram rods. In view of the above remarks, Applicant respectfully requests reconsideration and withdrawal of the rejection of Claim 4 under 35 U.S.C. §103(a).

Claim 5 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Kugelmann (U.S. Pat. No. 5,492,390) in view of Gray (U.S. Pat. No. 2,176,335) and Nagai (U.S. Pat. No. 5,499,547) and further in view of Yaeger (U.S. Pat. No. 4,559,512). This rejection is respectfully traversed.

Applicant notes that Claim 5 depends from Claim 4 and submits that Claim 5 overcomes the rejection under 35 U.S.C. §103(a) for at least the reasons expressed above for Claim 4.

Claim 6 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Kugelmann (U.S. Pat. No. 5,492,390) in view of Gray (U.S. Pat. No. 2,176,335), Nagai (U.S. Pat. No. 5,499,547) and Yaeger (U.S. Pat. No. 4,559,512) and further in view of Mitchell (U.S. Pat. No. 3,977,728). This rejection is respectfully traversed.

Applicant notes that Claim 6 depends from Claim 4 and submits that Claim 6 overcomes the rejection under 35 U.S.C. §103(a) for at least the reasons expressed above for Claim 4.

Claim 7 stands rejected under 35 U.S.C. §103(a) as being unpatentable over McIntyre (U.S. Pat. No. 510,283) in view of Crawly (U.S. Pat. No. 4,958,100). This rejection is respectfully traversed.

Applicant submits that the Office has not presented a *prima facie* case of obviousness as the combination of references proposed by the Office does not teach or suggest each of the limitations of Claim 7 as arranged in the claim. See, e.g., *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

As one example, Applicant notes that Claim 7 recites in part that the drive assembly is "operable to configure the rim between a circular profile and a non-circular profile.

The Office relies upon McIntyre and states that this reference teaches "a rim (outer circumferential surface of (1) (5a) or (4) (6)) with an outer circumferential surface (6) or (4) that defines at least one V-groove (6) (4) and (1) (5a) (Fig. 4) (Col. 2 line 78 – Col. 3 line 15)", that "the outer circumferential surface of (5a) and (1) corresponds to the rim" and that the drive assembly (14) (15) (16) (17) is "operable to configure the rim between a circular profile and a non-circular profile (Fig. 4) (Col. 2 line 78 – Col. 3 line 15".

As the Examiner has noted, McIntyre employs triangular segments (4) having a flat exterior surface. As shown in Figure 3, the cross-section of the pulley is not round, but rather has twelve distinct flat surfaces that are arranged about the rotary axis of the pulley. Moreover, while the conical segments that form the pulleys can be moved axially together or apart, such movement does not alter the shape of the portions of the pulley that are in contact with the belt. Rather, the axial movement of the conical segments will merely cause the cross-section of the pulley (at the point that contacts the belt) to become larger or smaller. Accordingly, McIntyre is entirely void of any teaching of a drive assembly that is operable to configure the rim between a circular profile and a non-circular profile.

As another example, Applicant notes that Claim 7 recites in part that "said rim has at least a pair of diametrically opposed openings in said outer circumferential surface" and that the piezoelectric stacks "extend through said openings presenting said non-circular profile". While the Examiner has stated that the horizontal grooves (2)

of McIntyre correspond to the diametrically opposed openings, Applicant submits that both McIntyre and Crawly are entirely void of any teaching that the piezoelectric material of Crawly could be received into the horizontal grooves (2) to form the non-circular profile. In this regard, the Examiner's analysis speaks to the use of the piezoelectric stacks of Crawly "to slide in and out of the opening", but negates any discussion of the how the intersecting conical structures of McIntyre would be modified or how the modified device of McIntyre would operate.

Applicant notes that it is wholly improper to simply combine elements of McIntyre and Crawly in this manner, even if all of the elements of the present claims could be found in those references. In this regard, Applicant notes that the Supreme Court has stated that "[a]s is clear from cases such as *Adams*, a patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art." *KSR Int'l v. Teleflex Inc.*, 127 S.Ct. 1727, 82 USPQ2d 1385, 1396 (2007). Moreover, in discussing the review of a determination of obviousness, the Supreme Court quoted from *In re Kahn* stating that "rejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness." *Id.* Applicant submits that any articulated reasoning must include a discussion of how the piezoelectric devices of Crawly would be incorporated into the structure of McIntyre and how the modified structure of McIntyre would operate, in addition to a discussion of why one of ordinary skill in the art would find such modification to be desirable.

In view of the above remarks, Applicant submits that the Office has not presented a *prima facie* case of obviousness. In this regard, Applicant submits that the

Office has not set forth the articulated reasoning and rational underpinning for the combination as set forth in *KSR Int'l* and moreover that the combination of references does not teach or suggest each limitation of the claim as arranged in the claim. Accordingly, reconsideration and withdrawal of the rejection of Claim 7 under 35 U.S.C. §103(a) are respectfully requested.

Claims 8 and 9 stand rejected under 35 U.S.C. §103(a) as being unpatentable over McIntyre (U.S. Pat. No. 510,283) in view of Luenberger (U.S. Pat. No. 3,995,505). This rejection is respectfully traversed.

As described above, a *prima facie* case of obviousness requires that the combination of references teach or suggest each of the limitations of the claim as arranged in the claim. Applicant notes that the Examiner's discussion of the rejection of Claim 8 is entirely void of any discussion of "said rim [having] at least a pair of diametrically opposed openings in said outer circumferential surface" and "said drive assembly is a pair of diametrically opposed inertia elements operable to extend through said openings presenting said non-circular profile". Accordingly reconsideration and withdrawal of the rejection of Claim 8 under 35 U.S.C. §103(a) are respectfully requested. Applicant notes that Claim 9 depends from Claim 8 and should overcome the rejection under 35 U.S.C. §103(a) for at least the reasons set forth for Claim 8, above.

Claims 10 and 11 stand rejected under 35 U.S.C. §103(a) as being unpatentable over McIntyre (U.S. Pat. No. 510,283) in view of Oppen (U.S. Pat. No. 3,916,927). This rejection is respectfully traversed.

As described above, a *prima facie* case of obviousness requires that the combination of references teach or suggest each of the limitations of the claim as arranged in the claim.

Applicant submits that even it were possible to substitute the hydraulic drive assembly of Opper to axially slide the conical segments of McIntyre, this combination would not teach or suggest each limitation of Claim 10 as arranged in the claim. For example, Claim 10 recites in part that "said pulley further comprises a spreader operably engaging between said hydraulic cylinder and said rim, said hydraulic cylinder urging said spreader to engage said rim urging said rim towards said circular profile as said oil pressure increases." As shown in Figures 1 and 2 of Opper, the hydraulic cylinder does not urge a spreader to engage a rim to urge the rim from a non-circular shape toward a circular profile. Applicant notes that operation of the driving linkage to cause corresponding axial movement of the sheave sections (13) or (16) does not urge any portion of the pulley towards a circular profile, but rather merely alters the axial distance between corresponding sheave segments to change the diameter of the point at which a belt contacts the sheave segments. Applicant notes, too, that McIntyre is entirely void of any teaching of a drive assembly that is operable to configure the rim between a circular profile and a non-circular profile. The substitution of the hydraulic drive assembly of Opper into the mechanism of McIntyre, therefore, cannot produce a system in which a hydraulic cylinder urges a spreader to engage a rim to urge the rim toward a circular profile. Accordingly reconsideration and withdrawal of the rejection of Claim 10 under 35 U.S.C. §103(a) are respectfully requested. Applicant notes that Claims 11-14 depend from Claim 10 and should overcome the rejection under 35 U.S.C. §103(a) for at least the reasons set forth for Claim 10, above.

Claim 12 stands rejected under 35 U.S.C. §103(a) as being unpatentable over McIntyre (U.S. Pat. No. 510,283) in view of Oppen (U.S. Pat. No. 2,916,927) and further in view of Cords (U.S. Pat. No. 3,813,883). This rejection is respectfully traversed.

Applicant initially notes that Claim 12 depends from Claim 10 and should overcome the rejection under 35 U.S.C. §103(a) for at least the reasons expressed above for Claim 10.

Additionally, Applicant notes that it is wholly improper to simply combine elements of McIntyre, Oppen and Cords in this manner, even if all of the elements of the present claims could be found in those references. In this regard, Applicant notes that the Supreme Court has stated that “[a]s is clear from cases such as *Adams*, a patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art.” *KSR Int’l v. Teleflex Inc.*, 127 S.Ct. 1727, 82 USPQ2d 1385, 1396 (2007). Moreover, in discussing the review of a determination of obviousness, the Supreme Court quoted from *In re Kahn* stating that “rejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.” *Id.* Applicant submits that any articulated reasoning must include a discussion of how the spring of Cords would be incorporated into the structure of Oppen, how the modified structure of McIntyre would operate, and why one of ordinary skill in the art would find such modification to be desirable.

In view of the above remarks, Applicant submits that the Office has not presented a *prima facie* case of obviousness. In this regard, Applicant submits that the

Office has not set forth the articulated reasoning and rational underpinning for the combination as set forth in *KSR Int'l* and moreover that the combination of references does not teach or suggest each limitation of the claim as arranged in the claim. Accordingly, reconsideration and withdrawal of the rejection of Claim 12 under 35 U.S.C. §103(a) are respectfully requested.

Claims 13 and 14 stand rejected under 35 U.S.C. §103(a) as being unpatentable over McIntyre (U.S. Pat. No. 510,283) in view of Oppen (U.S. Pat. No. 3,916,927) in view of Thomey (U.S. Pat. No. 5,722,909). This rejection is respectfully traversed.

Applicant notes that Claims 13 and 14 depend from Claim 10 and should overcome the rejection under 35 U.S.C. §103(a) for at least the reasons expressed above for Claim 10. Additionally, Applicant respectfully submits that the Examiner is incorrect in his assertion that the value specified in Claim 14 would be obvious to one of ordinary skill in the art. Applicant notes that the court of *In re Boesch* stated that "discovery of an optimum value of a result effective variable in a known process is ordinarily within the skill of the art." *Id* at 205 USPQ 219 (emphasis added). Applicant submits that the Office's reliance on *In re Boesch* is misplaced as neither Kugelmann or Thomey appear to teach or suggest that engine speed is a result effective variable when changing a non-circular profile on a pulley to a circular profile on the pulley.

Claim 1 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Balingit (U.S. Pat. No. 5,520,583) in view of Gray (U.S. Pat. No. 2,176,335). This rejection is respectfully traversed. Applicant notes that Claim 1 has been canceled by the paper.

Claims 17-19 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Thomey (U.S. Pat. No. 5,722,909) in view of Kugelmann (U.S. Pat. No. 5,492,390). This rejection is respectfully traversed.

Applicant notes that Claim 17 recites "altering the profile of the crankshaft pulley in response to a rotational speed of the crankshaft between a circular and a noncircular profile to generate a periodically occurring counteracting torque in the endless drive."

The Office has acknowledged that Thomey does not teach a crankshaft pulley having a configurable profile, but states that "Kugelmann teaches a pulley having a configurable profile between a circular and noncircular profile (Fig. 2) and generates a counteracting torque in response to engine speed (Col. 4, lines 17-67)." Applicant notes, however, that the words "torque" and "engine" are not employed in Kugelmann. Moreover, the section of Kugelmann is employed to describe the variable shape of a wheel and the maintenance of a particular wheel shape (e.g., the oval shape illustrated in Figure 2) in a desired orientation while the wheel is rotating. In the example of Figure 2 of Kugelmann, the oval shape is maintained in a fixed orientation (i.e., such that its major axis is parallel to the ground 36) while the wheel rotates. Figure 4 of Kugelmann illustrates that while the shape may be reconfigured/reoriented as desired, the shape of the wheel (10, 60, 66) is not configured to rotate with the wheel. In this regard, the shape of the wheel 60 would not rotate (i.e., its major axis would be disposed vertically) after the wheel 60 has rotated through an angle of 90 degrees; the shape of the wheel 60 would not rotate into the orientation of the wheel 66.

Applicant notes that the Kugelmann does not reorient the shape of the wheel as a function of wheel rotation because specific goals are being achieved through the

shape of the wheel. For example, the "short" oval shape of the wheel in Figure 2 was stated to provide greater contact between the wheel and the ground (36), whereas the "tall" oval shape of the wheel (60) in Figure 4 was stated to provide greater ground clearance.

In the context of a belt driven system, Kugelmann does not teach rotation of the wheel shape with the rotation of the wheel, but rather that the wheel shape should remain in a fixed position to control power transmission through the belt. For example, column 6 of Kugelmann describes controlling the shape to permit the belt to be removed and reinstalled without tools.

In view of the above remarks, Applicant submits that the Office has not presented a *prima facie* case of obviousness as the Examiner has not determined the scope and content of the prior art, ascertained the differences between the prior art and the claims, or considered the level of ordinary skill in the pertinent art. *Graham v. John Deere Co.*, 383 U.S. 1, 17-18 (1966). Accordingly, reconsideration and withdrawal of the rejection of Claims 17-19 under 35 U.S.C. §103(a) are respectfully requested.

Claims 15 and 16 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Kugelmann (U.S. Pat. No. 5,492,390) in view of Gray (U.S. Pat. No. 2,176,335) and further in view of Turner (U.S. Pat. No. 3,438,360). This rejection is respectfully traversed.

As described above, a *prima facie* case of obviousness requires that the combination of references teach or suggest each of the limitations of the claim as arranged in the claim.

Applicant notes that Claim 15 recites that "said hub having means for orienting said hub in a predetermined position relative to said driving shaft" and that "said orienting means comprises a reference mark on an external surface of the pulley, wherein the reference mark is not configured to be engaged by an element that is fixed to the driving shaft".

Applicant notes that Turner states that "[c]o-operating marks on the chain links and the sprockets prevent the timing being lost when removing and replacing the head." Applicant submits that one of ordinary skill in the art would understand Turner as describing the relationship between the timing marks on the sprockets and the timing chain and that such disclosure has no bearing on the claimed subject matter. More specifically, the timing marks on the sprockets are not employed to orient the sprocket relative to a driving shaft (the driving shaft in Turner is the crankshaft 8), but rather to align the sprocket to a timing chain. In contrast, Claim 15 describes the reference mark as being employed to orient the hub to a predetermined position relative to the driving shaft when the hub is mounted to the driving shaft.

Applicant notes that the Supreme Court has stated that "[a]s is clear from cases such as *Adams*, a patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art." *KSR Int'l v. Teleflex Inc.*, 127 S.Ct. 1727, 82 USPQ2d 1385, 1396 (2007). Moreover, in discussing the review of a determination of obviousness, the Supreme Court quoted from *In re Kahn* stating that "rejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness." *Id.*

The Examiner has stated that "it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the pulley in Kugelmann with the keyway connection in Turner to allow the pulley to maintain an oval shape where the major and minor [axes] stay at a predetermined location relative to a stationary reference point while the pulley is turning." Applicant, however, submits that such discussion is not relevant to the Examiner's position as the claim clearly states that "the reference mark is not configured to be engaged by an element that is fixed to the driving shaft". Accordingly, the keyway of Turner is an element that is fixed to the driving shaft and cannot comprise the reference mark that is recited in Claim 15. Moreover, the Examiner completely ignores the purpose and function of the keyway - in addition to inhibiting relative rotation between a shaft and a hub, the keyway permits the hub to be accurately positioned relative to the shaft. Accordingly, there is no need for a reference mark to align the hub relative to a driving shaft.

Accordingly, reconsideration and withdrawal of the rejection of Claims 15 and 16 under 35 U.S.C. §103(a) are respectfully requested.

CONCLUSION

It is believed that all of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicant therefore respectfully requests that the Examiner reconsider and withdraw all presently outstanding rejections. It is believed that a full and complete response has been made to the outstanding Office Action and the present application is in condition for allowance. Thus, prompt and favorable consideration of this amendment is respectfully requested.

If the Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at (248) 641-1600.

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Respectfully submitted,

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